Remarks

Claims 1-8 are pending.

Claims 1-8 stand rejected.

Claims 1, 4-6 have been amended.

Claims 1-8 are submitted herein for review.

No new matter has been added.

In the Office Action dated July 18, 2006, Examiner rejected claims 1-8 under 35 U.S.C. § 102(b) as being anticipated by Schneider (DE 4004908A1). Applicant respectfully disagrees with the Examiner's contentions and submits the following remarks in response.

While both the Schneider invention and the present invention are both directed to high temperature superconductors, the two inventions are concerned with completely different technical problems.

The present application deals with the transfer of heat from the high temperature superconducting ceramic (htsc) to its surroundings during cooling to its operational temperature and during operation at low temperature, which is usually the temperature of liquid nitrogen LN2 (-185C). According to the approach of the present application, the htsc is bonded to a metal which, in turn, can be connected to a cooling machine. Due to the difference of the thermal expansion coefficient of the htsc material and the metal, damage of the htsc material is likely to occur. According to the present invention, as claimed in independent claim 1, a heat conductive bonding agent is provided for compensation at the interface between the metal and the htsc material and in the at least one through hole. The bonding agent is **heat conductive** for compensating for the stress generated by the difference in thermal expansion coefficient and for allowing sufficient heat transfer between the htsc materials and the cooling device.

The Schneider invention, on the other hand, relates to the protection of the htsc during a fault event when superconductivity breaks down and the htsc becomes resistant, that is, when the htsc quenches. During quench a great amount of heat is generated which could result in burn out of the htsc and damage of the htsc device. As translated by the Applicants, Schneider states:

> If the oxide ceramic superconductor is to be deposited on a normal conducting material, at first the deposition of an oxide layer on the metal support is necessary which then serves as support layer for the superconductor to be subsequently deposited, This oxide layer acts as an **insulating** intermediate layer, so that during technical application of such a conductor neither excess current nor heat generated can transit and lead away to the normal conductor; technical application is not possible. (Schneider, col. 1, lines 56-67; translation and emphasis supplied.)

Furthermore, Schneider states:

> According to the present invention this problem is solved in that a metal conductor is partially covered by an **insulating** oxide layer, in that on the oxide layer, a layer of oxide ceramic material is provided and in that a good conducting and moldable metal is provided at least until the top surface of the oxide ceramic material to those areas of the conductor which are not covered by the **insulating** oxide layer and oxide ceramic material. (Schneider, col. 2, lines 6-14; translation and emphasis supplied.)

Please refer to the translated English abstract of Schneider, in which reference is made to the advantage that the current and heat produced are removed when the critical density is exceeded. This removal is due to the metal (4), silver for example, as referred to in Schneider. As an example, the insulating layer is disclosed in Schneider as nickel oxide.

Generally, the htsc component as referred to in Schneider comprises a support and a htsc layer. In the case that the support is electrically conductive, such as a metal, an insulating intermediate layer is required. The problem with such design is that during a fault event, due to the insulation layer, neither excess current nor heat can be transferred away from the htsc layer which can lead to burn out of the htsc layer, as described above.

According to Schneider, this problem is solved by providing through-holes passing through the htsc layer and the underlying insulating layer to the metal support and providing the htsc layer with a top layer of conductive material, e.g. silver, wherein the silver also fills the through-holes. Now, during a fault event, excess current as well as heat generated can be bypassed to the silver and transported to the metal support thereby protecting the htsc composite from damage by burn out, etc.

In conclusion, Schneider differs from the present invention in that according to the present invention, the intermediate layer is of heat conductive material, whereas the intermediate layer of Schneider is of a heat insulating material.

For the above stated reasons, the present invention, as defined in claim 1, overcomes the 102 rejection based on the Schneider reference. As claims 2-8 depend from independent claim 1, these claims overcome this rejection for the same reasons. Furthermore, claims 5 and 6 have been amended for clarity in accordance with Examiner's suggestions.

In view of the forgoing, Applicant respectfully submits that pending claims 1-8 are in condition for allowance, the earliest possible notice of which is earnestly solicited. If the Examiner feels that an interview would facilitate the prosecution of this Application they are invited to contact the undersigned at the number listed below.

Respectfully submitted,

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